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09/693,090	10/20/2000	Jennifer Q. Trelewicz	BLD9-2000-0060-US2	7807

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John L Rogitz	KISS, ERIC B

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2122	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- Th MAILING DATE of this communication appears on th cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _20 October 2000_.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-29_ is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) _1-29_ is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on _22 October 2000_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
       application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _2_.
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____ .

DETAILED ACTION

1.   Claims 1-29 have been examined.

Drawings

2.   This application contains informal drawings, which are acceptable for examination purposes only. When the application is allowed, Applicant will be required to submit new formal drawings.

Specification

3.   The abstract of the disclosure is objected to because the abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art. Correction is required. See MPEP § 608.01(b).

4.   The use of various trademarks, e.g., AS/400, UNIX, OS/2, WINDOWS NT, NETWORK STATION, and JAVA, has been noted in this application. Trademarks should be capitalized wherever they appear (capitalize each letter of the trademark or, alternatively, accompany the trademark with an appropriate designation symbol such as ™ or ®) and be accompanied by the generic terminology (use trademarks as adjectives, not as nouns; for example, "WINDOWS NT operating system" would be an appropriate use of the WINDOWS NT trademark).

Although the use of trademarks is permissible in patent applications, the proprietary

nature of the marks should be respected and every effort made to prevent their use in any manner

which might adversely affect their validity as trademarks.

5.   The disclosure is objected to, based on the content of the final paragraph (see p. 21, line

7, through p. 22, line 2), as discussed below.

The attempt to incorporate subject matter into this application by reference to,

> all structural and functional equivalents to the elements of the above-
> described preferred embodiment that are known or later come to be
> known to those of ordinary skill in the art,

is improper because it appears to be an attempt to create a "living" document based on

nebulous future modifications. It is unclear what specific information Applicant is

intending to incorporate.

A reservation for a future application of subject matter disclosed but not claimed

in a pending application will not be permitted in the pending application, but an

application disclosing unclaimed subject matter may contain a reference to a later filed

application of the same applicant or owned by a common assignee disclosing and

claiming that subject matter. See 37 CFR 1.79.

With regard to the final sentence of the disclosure (p. 21, line 21, through p. 22,

line 2), the Examiner respectfully points out that recitation of the phrase "means for"

does not automatically invoke the privilege provided for in 35 U.S.C. §112, sixth

paragraph.

Appropriate clarification or correction is required.

Claim Rejections - 35 USC § 112

6.   The following is a quotation of the first and second paragraphs of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7.   Claims 1-29 are rejected under 35 U.S.C. 112, first and second paragraphs, as failing to comply with the enablement requirement and being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a.   In the instant disclosure (see p. 21, lines 7-14), Applicant has stated,

> ...the scope of the present invention is accordingly to be limited by nothing other than the appended claims, in which reference to an element in the singular means 'at least one'.

It is unclear from this disclosure whether Applicant is attempting to redefine terminology within the claims in such a manner as to broaden the claims. For example, it is unclear whether the term "single register" in claim 1 is intended to, in fact, mean exactly one register as the plain language of the claim implies or whether Applicant intends the broader interpretation of "at least one register", implying that the use of multiple registers would fall within the metes and bounds

of the claims. Accordingly, the scope of the claims is not readily ascertainable in view of

conflicting possible interpretations.

An applicant is entitled to be his or her own lexicographer, and in many instances will
provide an explicit definition for certain terms used in the claims. Where an explicit definition is
provided by the applicant for a term, that definition will control interpretation of the term as it is
used in the claim. Toro Co. v. White Consolidated Industries Inc., 199 F.3d 1295, 1301, 53
USPQ2d 1065, 1069 (Fed. Cir. 1999) (meaning of words used in a claim is not construed in a
"lexicographic vacuum, but in the context of the specification and drawings."). See, e.g., In re
Paulsen, 30 F.3d 1475, 1480, 31 USPQ2d 1671, 1674 (Fed. Cir. 1994) (inventor may define
specific terms used to describe invention, but must do so "with reasonable clarity, deliberateness,
and precision" and, if done, must " set out his uncommon definition in some manner within the
patent disclosure' so as to give one of ordinary skill in the art notice of the change" in meaning)
(quoting Intellicall, Inc. v. Phonometrics, Inc., 952 F.2d 1384, 1387-88, 21 USPQ2d 1383, 1386
(Fed. Cir. 1992)).
    Any special meaning assigned to a term "must be sufficiently clear in the specification
that any departure from common usage would be so understood by a person of experience in the
field of the invention." Multiform Desiccants Inc. v. Medzam Ltd., 133 F.3d 1473, 1477, 45
USPQ2d 1429, 1432 (Fed. Cir. 1998).

b.   The aforementioned section of the disclosure appears to define the claims in a manner

distinctly different from that of the remaining portions of the disclosure. While the disclosure

may provide necessary enablement for the some possible interpretations of the claims (for

example, "single register" in claim 1 having a meaning of exactly one register), the disclosure

does not appear to support, with full, clear, concise, and exact terms, that which Applicant has

claimed, in view of the aforementioned section of the disclosure.

d.   In the interest of compact prosecution, claims 1-29 are further rejected as set forth below

in view of prior art based on the broadest reasonable interpretation of the language explicitly

recited in the claims.

e.   Applicant is encouraged to amend the claims to better reflect what Applicant intends to

claim as the invention.

Claim Rejections - 35 USC § 102

8.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9.   Claims 1-6, 11-21, and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by

Randall J. Fisher and Henry G. Dietz, "Compiling for SIMD Within a Register," 1998 Workshop

on Languages and Compilers for Parallel Computing, North Carolina, Aug 1998 (hereinafter

[FiD98]).

The detailed discussion of the individual rejected claims below is presented out of

sequence to better reflect the dependency groupings of the claims. The order in which the claims

are addressed represents the general order in which the claims would be renumbered by the

Examiner upon allowance of the application.

As per claim 1, [FiD98] discloses a compiler receiving higher-level code and outputting

lower-level code to enable a processor to simultaneously process multiple multi-bit data elements

in a single register (see, for example, section 1 on pp. 1-4), the logic of the lower-level code

including: establishing at least first and second signed, multi-bit data elements in at least a first

register (see, for example, see, for example, section 1 on pp. 1-4; Note that the SWARC

language supports signed data types--see, for example, section 4.1.1 on p. 15); and

simultaneously processing the elements (see, for example, section 1 on pp. 1-4).

As per claim 2, [FiD98] further discloses the compiler accessing at least one of: a

compiler directive, a flag, or a configuration file, to decide when to make elements independent

of each other (see, for example, section 4 on pp. 14-18).

As per claim 19, [FiD98] further discloses the compiler generating instructions to pack

multiple data elements from respective data sources into a common register to be operated on by

an algorithm simultaneously with each other (see, for example, section 4 on pp. 14-18).

As per claim 20, [FiD98] further discloses the first element being a first partial element

having a related second partial element established in a second register, and the lower-level code

output by the compiler causing the first and second partial elements to be combined after

processing (see, for example, section 2.3 on p. 9).

As per claim 3, [FiD98] further discloses a first element being provided from a first data

set and a second element being provided from a second data set different from the first (see, for

example, section 1 on pp. 1-4; and section 2 on pp. 4-11).

As per claim 4, [FiD98] further discloses the compiler allocating a respective output precision in a register for each data element to be processed in the register during a single cycle (see, for example, section 4.1.1 on p. 15).

As per claim 23, [FiD98] further discloses the compiler determining the output precision based at least in part on an input precision (see, for example, section 4.1.1 on p. 15).

As per claim 25, [FiD98] further discloses the compiler adding a bit of precision if the maximum magnitude negative number that is required for the data during processing is the maximum negative number that can be represented in the respective precision (see, for example, section 2.1.2 on pp. 6-7; and section 3.1 on p. 11).

As per claim 26, [FiD98] further discloses the compiler adding at least one bit of precision based at least in part on an operation on a data element (see, for example, section 4.1.1 on p. 15).

As per claim 24, [FiD98] further discloses the compiler receiving, as input, the output precision (see, for example, section 4.1.1 on p. 15).

As per claim 6, [FiD98] further discloses an output precision or an input precision being defined by means of a compiler directive, or a configuration file, or a variable definition (see, for example, section 4.1.1 on p. 15).

As per claim 11, [FiD98] discloses defining at least one compiler directive, instructions, or configuration file for a compiler defining at least one of: an input precision for at least one data element (see, for example, section 4.1.1 on p. 15); and multiple data sources of respective

data elements to be packed into a common register and operated on by an algorithm

simultaneously with each other (see, for example, section 1 on pp. 1-4; and section 2 on pp. 4-

11).

As per claim 12, [FiD98] further discloses the compiler determining first and second

precisions to be allocated in a single register to hold respective first and second signed data

elements (see, for example, section 1 on pp. 1-4; and section 2 on pp. 4-11), and the compiler

generating a lower-level code from a higher level code to undertake method acts comprising:

packing the elements into the register (see, for example, section 4 on pp. 14-18); and operating

on the elements (see, for example, section 1 on pp. 1-4; and section 2 on pp. 4-11).

As per claim 13, [FiD98] further discloses the register sending plural data elements

simultaneously to at least one computational subsystem (see, for example, section 1 on pp. 1-4;

and section 2 on pp. 4-11).

As per claim 14, [FiD98] further discloses the operation being a multiplication by a

constant or by a variable of known precision, or an addition, or a shift-left logical, or a

subtraction, or a bitwise AND, or a bitwise OR (see, for example, section 1 on pp. 1-4; and

section 2 on pp. 4-11).

As per claim 15, [FiD98] further discloses the elements being independent of each other

as defined by the compiler directive or configuration file (see, for example, section 1 on pp. 1-4;

section 2 on pp. 4-11; and section 4 on pp. 14-18).

As per claim 16, [FiD98] further discloses the first element being provided from a first

data set and the second element being provided from a second data set different than the first

(see, for example, section 1 on pp. 1-4; and section 2 on pp. 4-11).

As per claim 17, [FiD98] further discloses the first element being a first partial element

having a related second partial element established in a second register, and the lower-level code

causing the first and second partial elements to be combined after processing (see, for example,

section 1 on pp. 1-4; and section 2 on pp. 4-11).

As per claim 18, [FiD98] further discloses determining first and second precisions

including determining the precisions such that the maximum negative number that can be

represented in an element is one larger that the maximum negative number that can be

represented in the respective precision (see, for example, section 2.1.2 on pp. 6-7; and section 3.1

on p. 11).

As per claim 21, [FiD98] further discloses the compiler directive, instructions, or

configuration file embodying instructions to compile predetermined portions of code received by

the compiler to be executed simultaneously on packed data (see, for example, section 1 on pp. 1-

4; section 2 on pp. 4-11; and section 4 on pp. 14-18).

Claim Rejections - 35 USC § 103

10.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11.   Claims 5, 7-10, 22, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable

over [FiD98], as applied to claims 1 and 11 above in view of Official Notice.

As per claims 5 and 29, [FiD98] in addition to the disclosure applied above, [FiD98] fails

to expressly disclose the compiler receiving instructions not to compile a predetermined portion

of code received by the compiler. However, Official Notice is taken that such instructions not to

compile a predetermined portion of code have been well known and used at the time the

invention was made. As an example, comment statements have been well known and used in the

art of computer programming to provide insightful documentation making source code easier to

read by humans. Such comment statements generally are not compiled and do not affect the

resulting object code. Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to modify the system of [FiD98] to include instructions not to

compile a predetermined portion of code. One would be motivated to do so to provide additional

documentation without changing the behavior of a program.

As per claim 7, [FiD98] discloses a compiler program for outputting lower-level code to

process multi-bit, signed data elements (see, for example, see, for example, section 1 on pp. 1-4;

Note that the SWARC language supports signed data types--see, for example, section 4.1.1 on p.

15), the lower-level code comprising: packing at least first and second data elements into a single

register (see, for example, section 1 on pp. 1-4); and processing the elements simultaneously

(see, for example, section 1 on pp. 1-4). [FiD98] fails to expressly disclose the use of a computer

program storage device readable by a digital processing apparatus for implementing the

prescribed functions. However, Official Notice is taken that it had been well known to use such computer program storage devices for storing computer program instructions at the time the invention was made. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of [FiD98] to include the use of such a device in order to provide a means of storing/transporting/executing instructions necessary for implementing the disclosed computer-enabled procedure.

As per claim 8, [FiD98] further discloses flag means indicating whether a precision should be checked in at least one cycle (see, for example, section 4.1.1 on p. 15). Therefore, for reasons stated above, such a claim also would have been obvious.

As per claim 9, [FiD98] further discloses compiler directive means for defining an input precision (see, for example, section 4.1.1 on p. 15). Therefore, for reasons stated above, such a claim also would have been obvious.

As per claim 10, [FiD98] further discloses compiler directive means for defining multiple data sources of respective data elements to be packed into a common register and operated on by an algorithm simultaneously with each other (see, for example, section 1 on pp. 1-4; and section 2 on pp. 4-11). Therefore, for reasons stated above, such a claim also would have been obvious.

As per claim 22, [FiD98] further discloses means for indicating whether a precision should be checked (see, for example, section 4.1.1 on p. 15); means responsive to the means for

indicating for checking that the packed elements do not overflow or underflow or achieve a

maximum magnitude negative number representable in the precision in a cycle, undertaking

wrap or saturation in the elements to prevent corruption of other data elements in a register, or

signaling an error to be handled by an error-handling routine in the program (see, for example,

section 1 on pp. 1-4). Therefore, for reasons stated above, such a claim also would have been

obvious.

As per claim 27, [FiD98] further discloses means for adding a bit of precision if the

maximum magnitude negative number that is required for the data during processing is the

maximum magnitude negative number that can be represented in the respective precision (see,

for example, section 2.1.2 on pp. 6-7; and section 3.1 on p. 11). Therefore, for reasons stated

above, such a claim also would have been obvious.

As per claim 28, [FiD98] further discloses means for adding at least one bit of precision

based at least partially on an operation on a data element (see, for example, section 4.1.1 on p.

15). Therefore, for reasons stated above, such a claim also would have been obvious.

Conclusion

12.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

13.   Any inquiry concerning this communication or earlier communications from the

Examiner should be directed to Eric B. Kiss whose telephone number is (703) 305-7737. The

Examiner can normally be reached on Tue. - Fri., 7:30 am - 5:00 pm. The Examiner can also be

reached on alternate Mondays.

        If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's

supervisor, Tuan Dam, can be reached on (703) 305-4552. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

        Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EBK /EBK
March 19, 2004

**TUAN DAM
SUPERVISORY PATENT EXAMINER**